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Air Force chief scientist group visits lab

by Ranney Adams, Propulsion Directorate

EDWARDS AIR FORCE BASE, Calif. — Exploring the future of Air Force rocket propulsion was the focus of the Air Force Chief Scientist and his colleagues during their visit to Edwards Air Force Base.

Dr. Alexander H. Levis, Chief Scientist of the Air Force, serves as the chief scientific advisor to the Chief of Staff and Secretary of the Air Force, providing assessments on a wide range of scientific and technical issues affecting the Air Force mission. He led a group of 30 technical advisors, lab chief scientists, chief engineers, and analysts from key Air Force organizations on their visit to Edwards Air Force Base and the Air Force Research Laboratory's Edwards Research Site.

Known as the AF Chief Scientist Group, they meet twice a year, exchanging information across the Air Force. This sustains and enhances current and future Air Force operational capabilities by exploiting the support and development of research and technology.

Hosted by Site Commander Col. Joe Boyle, briefings on important technical issues critical to advancing rocket propulsion science and technology research efforts were presented on a number of topics. They included the progress towards Integrated High Payoff Rocket Propulsion Technology (IHPRPT) program goals, the doubling of the nation's rocket propulsion capabilities by 2010. The AFRL's Propulsion Directorate personnel at the site lead the Air Force segment of the program.

The group visited research facilities that pursued advanced materials and propellants. Those materials, like superplastic Polyhedral Oligomeric Silsequioxane (POSS) formulas, have demonstrated extraordinary capabilities in strength and resistance to heat. Propellant research, in many cases assisted by computational chemists using supercomputers, are pursuing High Energy Density Matter (HEDM). These chemical formulations are expected to result in capabilities that exceed today's best propellants.

The group met researchers at the Electric Propulsion Lab, who, as part of their task to turn science fiction into scientific fact, demonstrated thrusters capable of inserting satellites into final orbit, and then maintaining their position for long term and efficient space missions. Not quite household words, Pulsed Plasma Thrusters, Hall Thrusters, and many others were described as they operated in their altitude test chambers.

As a finale to their briefings, the group was given a tour of massive and unique rocket test stands that represented the site's more than 50 years of rocket propulsion contributions and many exciting firsts.

Developing ballistic and tactical missiles, space launch vehicles, and spacecraft propulsion for achieving and maintaining orbit in research facilities and then validating them are all part of an efficient equation. That equation combines the laboratory's research personnel and its unique facilities, providing and assuring the Air Force and the nation that they will receive value for their rocket propulsion research investment.

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